

CLAIMS:

1. An inverter apparatus for converting a DC power converted from an input AC power to an output AC power of a variable frequency and a variable electric power to drive an induction motor at a variable speed, comprising:

a rectifying unit for converting said input AC power to said DC power, a filter capacitor for smoothing a DC output of said rectifying unit, an inverter unit having an input connected across said filter capacitor, an input current detector for detecting an input current to said inverter unit and a gate circuitry for driving said inverter unit, said inverter apparatus further comprising:

an excitation current detection unit for detecting an excitation current of said induction motor from an output signal of said input current detector, a gate signal for driving said gate circuitry and a reference phase command;

a setting unit for setting a limitation level of said excitation current;

a torque boost voltage command unit for producing a torque boost voltage command according to an inverter frequency command; and

a torque boost voltage compensation unit for changing said torque boost voltage command so that said detected excitation current value is smaller than or equal to said limitation level.

2. An inverter apparatus according to Claim 1, wherein said torque boost voltage compensation unit includes a limiter processing unit and inverts said torque boost voltage command, said inverted torque boost voltage command being limiter-processed as a lower limiter value of said limiter processing unit to produce a compensation value of said torque boost voltage command.

3. An inverter apparatus according to claim 1, wherein said excitation current detection unit uses an output voltage phase of said inverter apparatus to detect an equivalent of said excitation current by calculation based on said detected motor current value.

4. An inverter apparatus according to claim 1, wherein said excitation current detection unit uses an output voltage phase of said inverter apparatus to detect an equivalent of said excitation current by calculation based on a DC input current of said inverter apparatus.

5. An inverter apparatus according to Claim 1, wherein a motor current which is a no-load current is limited substantially to an excitation current limitation level when said torque boost voltage command is increased gradually in a state that said induction motor is being operated in no load.

6. An inverter apparatus according to Claim 1, wherein an inverter output voltage is controlled to be substantially constant after the time when a motor current which is a no-load current reaches substantially an excitation current limitation level when said torque boost voltage command is increased gradually in the state that said induction motor is being operated in no load.